

Coverage Spotlight

## OIL, RELIGION, & MODERNIZATION DEFINE TODAY'S SAUDI ARABIA

Since discovering its massive oil reserves in the 1930's, the [Kingdom of Saudi Arabia](#) has been a country struggling to transition into the modern world. While the country restricts outside tourism, and many western liberties for its residents, the country's monarchy is pushing for a diversified economy and increased foreign investment. The most ambitious reforms have occurred since Saudi Arabia applied for entry in the World Trade Organization (WTO) in 1996. Today, Saudi Arabia continues its balance between necessary modernization and securing its deep-rooted cultural and religious beliefs.

[GIS use in Saudi Arabia](#) is on the increase. The most prominent application is within the geophysical industry. Saudi Arabia manages



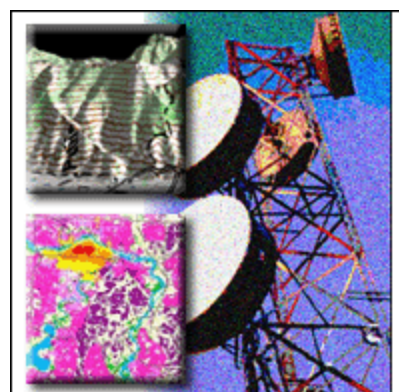
the world's largest oil reserves, totaling over 26% of worldwide reserves. It's no surprise that it is also the world's leading exporter of crude oil products. Engineers, both domestic and foreign, maintain a complex network of pipelines from wells in the northeastern part of the

Market Solutions

## GIS SOLUTIONS FOR INTERNATIONAL TELECOM DEVELOPERS

The global telecommunications market has been on a roller coaster ride the past several years. The wireless sector, affected by varying economies, international deregulation, and rapidly advancing technology, has become one of the most competitive marketplaces in business. Today, wireless operators strive for an increasingly higher level of network efficiency and customer attention. Telecom professionals are turning to GIS to ensure their businesses operate at peak efficiencies.

RF engineers, the professionals tasked with designing the wireless coverage networks, use geospatial databases to select cellular tower placement. Satellite imagery, digital elevation models (DEM), topographic maps, and a variety of land use & land cover data, to create 3D simulations of existing and proposed networks. This modeling enables field engineers to conduct wave propagation studies, and identify the optimal tower location, height, and signal strength. For example, if a tower is placed along a hillside it may not produce a clear cellular signal for users on the hill's opposite side. Therefore, multiple towers may be necessary to carry a clear signal to cell phone users in a hilly area. In densely-populated urban areas, tall buildings interfere with the clarity of wireless signals. Forest cover, land ownership, ease of access, and other variables all play a role in tower placement.



*3D modeling, clutter data, & remote sensing supports RF Engineers*

A primary challenge for engineers is finding source data to create the GIS models. Source data, such as contour elevations, roads, vegetation, and other land cover data, is relatively scarce in developing countries. However, sprawling new networks are under construction throughout Latin America, the Middle East, and Africa. In some cases, wireless networks are being installed where no land-lines or utility infrastructure exists. This creates an even greater need for accurate network modeling.

LAND INFO International is one of the few producers of international base data. The company has supported hundreds of RF modeling projects outside of the United States. The company maintains the world's largest commercial archive of [topographic maps](#), [DEMs](#), [contour elevation layers](#), [road layers](#), [hydrology layers](#), and [custom feature extraction layers](#). LAND INFO also markets 0.95-meter to 15-meter

country to sea ports on the Red Sea and Arabian Gulf. In addition to traditional applications, the Saudi pipeline managers are using geotechnologies to help secure the lengthy network of desert pipelines. Security concerns have increased substantially in the wake of global terrorism and regional political uncertainties.

Oil is not the only valuable resource under the vast Saudi Arabian deserts. Scientists are actively exploring the country for new mineral deposits and subterranean water reservoirs. Like much of the [Middle East region](#), Saudi Arabia water resources are scarce. Water experts are looking to new technologies, such as GIS and remote-sensing to better manage irrigation, and hopefully untap new fresh water sources. Currently, the government has implemented an aggressive conservation program throughout the country. The government is also evaluating the opportunities to build more desalination plants to lessen the potential crisis.

There is much hope that large, undiscovered deposits of copper, iron, and gold lie beneath the sands of Saudi Arabia. Geologists are using GIS to help pinpoint exploration sites in the western section of the country. Through a GIS database, the age of rock, shape of terrain, active mineral sites, and other base maps, are combined to give scientists a powerful planning tool.

LAND INFO offers full GIS data coverage to support engineering, security, land-use, and other applications within [Saudi Arabia](#). For more coverage details, please visit the [MidEast Coverage](#) pages.

"GIS modeling has become a critical component in developing our wireless networks around the world," explained **Richard Weiler**, Production Team Leader for [Motorola](#)'s GIS Department. "The better the data models we provide to our field engineers, the more reliable our wireless services."

resolutions for global [satellite imagery](#). LAND INFO's extension production facility and data specialists can deliver custom RF data solutions for virtually any size project. For further information, contact your LAND INFO representative at +1 303-369-6800 (1-800-949-5080) or [via the Internet](#).

#### Education Outreach

## LAND INFO LOOKING FOR GIS PROFESSIONALS TO SUPPORT "GIS DAY" EVENTS IN DENVER



LAND INFO International is now finalizing plans for this year's [GIS Day](#) events on November 20, 2002. The company hopes to expand on last year's workshops for elementary classes in the Denver, Colorado. LAND INFO is actively searching for partners to jointly present the value of GIS to multiple schools in the Denver area. The company is looking for both GIS users and commercial vendors within the geospatial industry.

If you or your company would like to team with LAND INFO for the Denver workshops, please contact [Kevin Kuluvar](#) at 1-800-949-5080.

For the 2001 GIS Day, LAND INFO

hosted GIS presentations for fifth-graders at a local Denver area school. Last year's presentation introduced students to the general characteristics and real-life applications of topographic maps and GIS. This year, the company is looking to expand the event to additional schools.

GIS Day is a national grassroots event to publicize and showcase the real-world applications of geotechnologies. The theme for this year's GIS Day is "America's Backyard: Exploring Your Public Lands." GIS Day is a national grassroots event to publicize and showcase the

The GIS Day celebration has also expanded outside the United States. This year, over 20 countries, including Russia, Peru, Mexico, Yemen, Algeria, Turkey, China, and South Africa, are planning events.

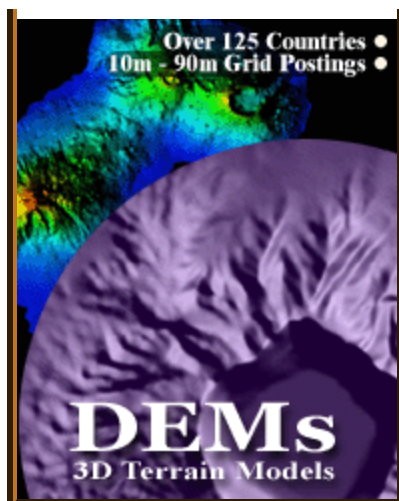
If you would like to participate in LAND INFO's GIS Day presentations, please contact Kevin today at 1-800-949-5080 ext. 218. LAND INFO is looking for GIS managers, engineers, and commercial GIS providers to help with the Denver area workshops. For more info, also visit [GISday.com](#).

### LAND INFO International, LLC

LAND INFO International offers GIS data and services for the United States and over 125 other countries. The company markets digital data, including topographic maps, 3D terrain models, contour elevation data, satellite imagery, aerial

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